

I. Amendments to the Specification

Please replace the specification with the following. A clean version of the amended specification is enclosed as Attachment A.

~~Redirecting device~~ Guide loop for a safety belt

Field of the Invention

[0001] The invention relates to a ~~redirecting device~~ guide loop for a motor vehicle safety belt ~~according to the introductory section of Claim 1.~~

Background of the Invention

[0002] A ~~redirecting device~~ guide loop for a safety belt in a motor vehicle is ~~described in US 6,702,327 B2. known from DE 202 05 570 UI, which basically exhibits~~ It includes a guide element ~~with a~~ having a guide slit, also designated as a belt eye, for the safety belt. The guide element is in the form of a one-piece metal body of steel plate manufactured by the cold forming process, which is fixed to the vehicle body by means of a fixing screw through a fixing hole in a ~~rear~~ mounting surface. ~~Furthermore, a~~ A plastic adapter is connected to the guide element, ~~which exhibits~~ and includes a cylindrical collar for fixing of the same which can be inserted in the fixing hole and also a fixable displacement body at the upper limit of the belt eye for limiting the width of the guide slit.

[0003] A disadvantage of this solution ~~has proven to be~~ is that the screw head of the fixing screw is only supported on the guide element with an ~~overlap which must be considered~~ extremely small overlap due to the cylindrical collar of the adapter ~~which is located inside the fixing hole. Because of this very slight overlap, the~~

overlap, there is significant risk that the fixing screw could pop out of the fixing hole of the guide elements ~~is present~~ in the presence of ~~greater~~ large loads, ~~as occur, for example, such as those occurring~~ during a crash.

[0004] ~~In order to counteract this unsatisfactory state of affairs, the~~ One solution is ~~known of~~ enlarging the overlap by means of correspondingly-sized washers or of ~~using~~ using fixing screws with special dimensions, in particular screws with large heads. However, this leads to increased expenditure ~~as regards costs and~~ parts count. material. ~~This is the point at which the invention described in the following text comes into play.~~ Therefore, an improved solution is required.

[0005] ~~Starting from the state of the art according to DE 202 05 570 U1~~ guide loop described in US 6,702,327, it is ~~the task~~ the objective of the present invention to create an improved device ~~of the generic kind~~ which effectively prevents the fixing screw head from popping out of the fixing hole, while ~~maintaining fixing of an~~ attaching an adapter, ~~which in itself is known,~~ to the guide element with a simple and low-cost means.

Summary of the Invention

[0006] ~~According to the invention the task is fulfilled in conjunction with the characteristics described in the introductory section to Claim 1, in that the~~ In ~~satisfying the above need, the present invention provides a guide loop including a~~ guide element, having a fixing hole, and adaptor. ~~of the guide element is on the one hand~~ The fixing hole is formed by a boring whose cross section is selected ~~so as to~~ be slightly ~~greater~~ larger than the external diameter ~~of the~~ of a screw shaft of a fixing screw in order to ~~achieve greatest possible~~ maximize the overlap of the ~~available~~ free a bearing surface of the guide element ~~with the~~ with a head of the fixing screw.

~~and on the other hand~~ In addition, a number of grooves are ~~assigned to~~ included in the boring, distributed ~~over its~~ around its circumference, into which ~~for their part~~ fixing arms of the adapter, pointing in the axial direction of the boring, extend when the adapter is mounted.

[0007] ~~Within this~~ This arrangement is ~~it particularly~~ particularly advantageous if the grooves are distributed evenly over the circumference of the boring, so that they effect assist in centering of centering the fixing screw.

[0008] ~~As a further development of the invention, it is provided that~~ In addition, the fixing arms are formed so as to be elastic within certain limits. ~~It is also proposed that the~~ The fixing arms include exhibit on their free end respectively a hook-like structure pointing radially outwards engaging behind the walls of the guide element when mounted. ~~It is useful if the~~ The fixing arms or their hook-like ~~structure are~~ structure may also be supplied with a guide chamfer.

[0009] ~~In an advantageous manner, in other words~~ Therefore, without the use of additional components such as washers and without the need to manufacture a special type of screw, the ~~redirecting device~~ guide loop proposed here ~~allows a greatest possible~~ maximizes the overlap of the available ~~free bearing surface of the~~ guide element by element with the screw head of the fixing screw, ~~to be achieved, taking the state of the art into consideration, and therefore effectively prevents the~~ screw head from popping out of the fixing hole. ~~Finally it~~ It is also advantageous to ~~provide exact fixing of~~ affix the adapter onto the guide element, ~~in other words also to ensure security against~~ to prevent free and unwanted ~~turning~~ rotation in relation to the guide element, without ~~basically~~ reducing the aforementioned overlap of the guide element by the screw head.

[0010] A further embodiment of the ~~redirecting device~~ guide loop formed according to the present invention provides that the fixing arms, when ~~in-mounted~~ mounted to the guide element, ~~condition~~ form a circle with a slightly smaller internal diameter than the internal diameter of the boring. The advantage of this design ~~consists in the fact~~ is that the reduction of the cross-section of the fixing arms ensures that the fixing screw lies against the fixing arms without causing any noise.

[0011] Finally, it is possible to form the ~~redirecting device~~ guide loop so that the fixing arms of the adapter are positioned ~~in such a way~~ relative to the ~~displacement body~~ adaptor such that when the adapter is mounted, a ~~basically~~ an approximately constant slit width height of the guide slits slit results. This measure also ensures that the adapter ~~cannot turn~~ cannot rotate freely in relation to the guide element ~~following mounting~~ when mounted, and ~~that~~ and therefore a constant, preferably parallel geometry remains in the ~~redirecting device~~ guide slit for belt guidance.

[0012] Further objects, features and advantages of this invention will become readily apparent to persons skilled in the art after a review of the following description, with reference to the drawings and claims that are appended to and form a part of this specification.

Brief Description of the Drawings

[0013] The invention will be described in the following text by means of an embodiment shown in schematic form in the drawings. The drawings are as follows:

[0014] Fig. 1 is an exploded representation of the ~~redirecting device~~ guide loop according to the ~~invention,~~ present invention;

[0015] Fig. 2 is an assembled, ~~redirecting device in a perspective view,~~ perspective view of the guide loop of Fig. 1;

[0016] Fig. 3 ~~is a birds-eye front view of the redirecting device according to Fig. 2,~~ guide loop of Fig. 2;

[0017] Fig. 4 ~~a section I-I according to Fig. 3,~~ is a front view of the guide element A included with the guide loop of Fig. 1; and

[0018] Fig. 5 ~~a View A according to Fig. 1~~ is a section taken along line I-I of Fig. 3.

Detailed Description of the Invention

[0019] ~~According to Fig. 1 to Fig. 5 the~~ The guide loop ~~redirecting device for a safety belt not~~ belt according to the present invention is shown in more detail an exploded view in Fig. 1. It first consists of includes a guide element 2, provided with a guide slit 1 for ~~the said~~ the safety belt (not shown), and also includes a fixing screw 3 and an adapter 6, which The guide element 2 is fixed to a bearing component of the vehicle body (not shown), ~~in more detail here,~~ for example a vehicle pillar, by means of ~~a fixing~~ the fixing screw 3 led screw 3 inserted through a fixing hole in the form of a boring 4 in the guide element 2. For its part, the guide slit 1 ~~exhibits~~ includes a rounded running surface 5 for the safety belt, in order to ensure unhindered guidance of the same.

[0020] Guide The guide element 2 is ~~as shown~~ preferably manufactured as one in ~~one piece of a piece of sheet steel as a complete metal component~~ by means of cold forming. Alternatively, it or is formed is formed as a steel plate moulded round with plastic.

[0021] Between the guide element 2 and the bearing component, ~~an component,~~ the adapter 6, is provided and ~~which is already known and is preferably manufactured of plastic by the~~ by an injection moulding process, process. It includes

~~is positioned along with~~ a displacement body 7, ~~which also exhibits and~~ an opening 8 ~~which is penetrated by the~~ fixing screw 3. ~~Guide~~ The element 2 and ~~the~~ adapter 6 are therefore arranged coaxially to one another, whereby ~~the~~ displacement body 7, ~~as it known,~~ serves to limit the slit width height of ~~the~~ guide slit 1 (see Figure 2).

[0022] In order to fulfil ~~the set the~~ task in a ~~satisfactory manner, taking the fixing of adapter 6 onto guide element 2 into consideration, namely to effectively prevent the of preventing a~~ screw head 9 of ~~the~~ fixing screw 3 from popping out of the fixing hole or the boring 4 of ~~the~~ guide element 2, ~~by simple and cost effective means, according to the invention the cross-section of the~~ boring 4 is selected so as to be only slightly bigger larger than the external diameter of a screw shaft 10. This ~~achieves a~~ achieves the greatest-possible overlap of the available-free bearing surface 11 of ~~the~~ guide element 2 by ~~the~~ screw head 9.

[0023] This ~~may at first not be so notable in itself, but in combination with the arrangement of a number, namely~~ Further retention of the fixing screw 3 is achieved by the inclusion of two or ~~more,~~ more grooves 12 preferably distributed evenly over the circumference of ~~the~~ boring 4 of ~~the~~ guide element 2, element 2, ~~into which for their part~~ Thus, when the ~~redirecting device~~ guide loop is mounted, fixing arms 13 of ~~the~~ adapter 6 extend ~~which point in the~~ axial direction of ~~the~~ boring 4 (Fig. 4), and into the grooves 12. This provides a considerable improvement ~~as against over~~ the current state of the art ~~is achieved~~ in relation to disturbance-free function of the guide loop ~~redirecting device also in case of a crash, as is required by the task set, along with~~ securely fixing of ~~the~~ the adapter 6 ~~on guide~~ to the guide element 2.

[0024] ~~In the current invention,~~ In a preferred embodiment, three grooves 12 are provided, between which areas of the free bearing surface 11 are created or maintained for the screw head 9 (Fig. 4).

[0025] As already described in the introductory section of the description, ~~according to the state of the art (DE 202 05 570 U1) and in US 6,702,327~~ these features replace areas ~~are for most part replaced by~~ a cylindrical collar fixed to Adapter 6, which for its part the adapter 6. As noted above, the cylindrical collar decreases the overlap of the available free bearing surface 11 of the guide element 2 ~~by screw~~ by the screw head 9 in a disadvantageous manner.

[0026] In the ~~version explained here,~~ present invention it has ~~proven is~~ advantageous to form the fixing arms 13 of the adapter 6 to be elastic within limits, in order to make it easier to introduce them into the grooves 12 during assembly and in addition also to achieve a certain force fit.

[0027] It ~~can also be~~ is also advantageous, as ~~particularly~~ shown in Fig. 1 and Fig. 3, to provide the fixing arms 13 with a hook-shaped structure 14 at their free ends facing radially outwards, which engage behind the walls of the guide element 2 when mounted and therefore provide additional interference or form fit.

[0028] In the same way it ~~has proven is again~~ advantageous to provide a guide chamfer 15 on the fixing arms 13 or on their the hook-shaped structure 14, ~~which also means that to make the~~ mounting of the adapter 6 on the guide element 2 easier is easier.

[0029] As a person skilled in the art will readily appreciate, the above description is meant as an illustration of implementation of the principles this invention. This description is not intended to limit the scope or application of this invention in that the invention is susceptible to modification, variation and change, without departing from spirit of this invention, as defined in the following claims.

Reference Nos.

- 1 — guide slit
- 2 — guide element
- 3 — fixing screw
- 4 — boring
- 5 — running surface
- 6 — adapter
- 7 — displacement body
- 8 — opening
- 9 — screw head
- 10 — screw shaft
- 11 — bearing surface
- 12 — grooves
- 13 — fixing arms
- 14 — hook shaped structure
- 15 — guide chamfers

ATTACHMENT A

Guide loop for a safety belt

Field of the Invention

[0001] The invention relates to a guide loop for a motor vehicle safety belt.

Background of the Invention

[0002] A guide loop for a safety belt in a motor vehicle is described in US 6,702,327 B2. It includes a guide element having a guide slit, also designated as a belt eye, for the safety belt. The guide element is in the form of a one-piece metal body of steel plate manufactured by the cold forming process, which is fixed to the vehicle body by means of a fixing screw through a fixing hole in a mounting surface. A plastic adapter is connected to the guide element, and includes a cylindrical collar for fixing of the same which can be inserted in the fixing hole and also a fixable displacement body at the upper limit of the belt eye for limiting the width of the guide slit.

[0003] A disadvantage of this solution is that the screw head of the fixing screw is only supported on the guide element with an extremely small overlap due to the cylindrical collar of the adapter located inside the fixing hole. Because of this very slight overlap, there is significant risk that the fixing screw could pop out of the fixing hole of the guide elements in the presence of large loads, such as those occurring during a crash.

[0004] One solution is enlarging the overlap by means of correspondingly-sized washers or using fixing screws with special dimensions, in particular screws with large heads. However, this leads to increased costs and parts count. Therefore, an improved solution is required.

[0005] Starting from the guide loop described in US 6,702,327, it is the objective of the present invention to create an improved device which effectively prevents the fixing screw head from popping out of the fixing hole, while attaching an adapter to the guide element with a simple and low-cost means.

Summary of the Invention

[0006] In satisfying the above need, the present invention provides a guide loop including a guide element, having a fixing hole, and adaptor. The fixing hole is formed by a boring whose cross section is selected to be slightly larger than the external diameter of a screw shaft of a fixing screw in order to maximize the overlap of a bearing surface of the guide element with a head of the fixing screw. In addition, a number of grooves are included in the boring, distributed around its circumference, into which fixing arms of the adapter, pointing in the axial direction of the boring, extend when the adapter is mounted.

[0007] This arrangement is particularly advantageous if the grooves are distributed evenly over the circumference of the boring, so that they assist in centering the fixing screw.

[0008] In addition, the fixing arms are formed so as to be elastic within certain limits. The fixing arms include on their free end a hook-like structure pointing radially

outwards engaging behind the walls of the guide element when mounted. The fixing arms or their hook-like structure may also be supplied with a guide chamfer.

[0009] Therefore, without the use of additional components such as washers and without the need to manufacture a special type of screw, the guide loop proposed here maximizes the overlap of the bearing surface of the guide element with the screw head of the fixing screw, and therefore prevents the screw head from popping out of the fixing hole. It is also advantageous to affix the adapter onto the guide element to prevent free and unwanted rotation in relation to the guide element, without reducing the overlap of the guide element by the screw head.

[0010] A further embodiment of the guide loop formed according to the present invention provides that the fixing arms, when mounted to the guide element, form a circle with a slightly smaller internal diameter than the internal diameter of the boring. The advantage of this design is that the reduction of the cross-section of the fixing arms ensures that the fixing screw lies against the fixing arms without causing any noise.

[0011] Finally, it is possible to form the guide loop so that the fixing arms of the adapter are positioned relative to the adaptor such that when the adapter is mounted, an approximately constant slit height of the guide slit results. This also ensures that the adapter cannot rotate freely in relation to the guide element when mounted, and therefore a constant, preferably parallel geometry remains in the guide slit for belt guidance.

[0012] Further objects, features and advantages of this invention will become readily apparent to persons skilled in the art after a review of the following

description, with reference to the drawings and claims that are appended to and form a part of this specification.

Brief Description of the Drawings

[0013] The invention will be described in the following text by means of an embodiment shown in schematic form in the drawings. The drawings are as follows:

[0014] Fig. 1 is an exploded representation of the guide loop according to the present invention;

[0015] Fig. 2 is an assembled, perspective view of the guide loop of Fig. 1;

[0016] Fig. 3 is a front view of the guide loop of Fig. 2;

[0017] Fig. 4 is a front view of the guide element A included with the guide loop of Fig. 1; and

[0018] Fig. 5 is a section taken along line I-I of Fig. 3.

Detailed Description of the Invention

[0019] The guide loop for a safety belt according to the present invention is shown in an exploded view in Fig. 1. It includes a guide element 2, provided with a guide slit 1 for the safety belt (not shown), and also includes a fixing screw 3 and an adapter 6. The guide element 2 is fixed to a bearing component of the vehicle body (not shown), for example a vehicle pillar, by means of the fixing screw 3 inserted through a fixing hole in the form of a boring 4 in the guide element 2. For its part, the guide slit 1 includes a rounded running surface 5 for the safety belt, in order to ensure unhindered guidance of the same.

[0020] The guide element 2 is preferably manufactured as one piece of sheet steel by means of cold forming. Alternatively, it is formed as a steel plate moulded round with plastic.

[0021] Between the guide element 2 and the bearing component, the adapter 6, is provided and preferably manufactured of plastic by an injection moulding process. It includes a displacement body 7, and an opening 8 penetrated by the fixing screw 3. The element 2 and the adapter 6 are arranged coaxially to one another, whereby the displacement body 7 serves to limit the height of the guide slit 1 (see Figure 2).

[0022] In order to fulfil the task of preventing a screw head 9 of the fixing screw 3 from popping out of the boring 4 of the guide element 2, the cross-section of the boring 4 is selected so as to be only slightly larger than the external diameter of a screw shaft 10. This achieves the greatest-possible overlap of the bearing surface 11 of the guide element 2 by the screw head 9.

[0023] Further retention of the fixing screw 3 is achieved by the inclusion of two or more grooves 12 preferably distributed evenly over the circumference of the boring 4 of the guide element 2. Thus, when the guide loop is mounted, fixing arms 13 of the adapter 6 extend in the axial direction of the boring 4 and into the grooves 12. This provides a considerable improvement over the current state of the art in relation to disturbance-free function of the guide loop in case of a crash, along with securely fixing the adapter 6 to the guide element 2.

[0024] In a preferred embodiment, three grooves 12 are provided, between which areas of the free bearing surface 11 are created or maintained for the screw head 9 (Fig. 4).

[0025] As described in the introductory section of the description, and in US 6,702,327 these features replace a cylindrical collar fixed to the adapter 6. As noted above, the cylindrical collar decreases the overlap of the bearing surface 11 of the guide element 2 by the screw head 9 in a disadvantageous manner.

[0026] In the present invention it is advantageous to form the fixing arms 13 of the adapter 6 to be elastic within limits, in order to make it easier to introduce them into the grooves 12 during assembly and in addition also to achieve a certain force fit.

[0027] It is also advantageous, as shown in Fig. 1 and Fig. 3, to provide the fixing arms 13 with a hook-shaped structure 14 at their free ends facing radially outwards, which engage behind the walls of the guide element 2 when mounted and therefore provide additional interference or form fit.

[0028] In the same way it is again advantageous to provide a guide chamfer 15 on the fixing arms 13 or on the hook-shaped structure 14, to make the mounting of the adapter 6 on the guide element 2 easier.

[0029] As a person skilled in the art will readily appreciate, the above description is meant as an illustration of implementation of the principles this invention. This description is not intended to limit the scope or application of this invention in that the invention is susceptible to modification, variation and change, without departing from spirit of this invention, as defined in the following claims.

Certificate

I, ELIZABETH FLINT, residing at 2, Cleveland Place, Exmouth
Devon CB 8 1BL

hereby declare

that I am familiar with the German and English languages and am a professional translator.

That I have prepared a translation of Application PCT/EP2004/003857, filed April 13, 2004 and entitled „Umlenkvorrichtung für einen Sicherheitsgurt“ (Redirecting device for a safety belt), said translation thereof being attached thereto and made part of this declaration.

To the best of my knowledge and belief, the above-mentioned translation is accurate and fairly reflects the contents and meaning of the original document.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on 17 December 2005

Elizabeth Flint
(Name of Translator)

Redirecting device for a safety belt

The invention relates to a redirecting device for a safety belt according to the introductory section of Claim 1.

A redirecting device for a safety belt in a motor vehicle is known from DE 202 05 570 U1, which basically exhibits a guide element with a guide slit, also designated as a belt eye, for the safety belt. The guide element is in the form of a one-piece metal body of steel plate manufactured by the cold forming process, which is fixed to the vehicle body by means of a fixing screw through a fixing hole in a rear mounting surface. Furthermore, a plastic adapter is connected to the guide element, which exhibits a cylindrical collar for fixing of the same which can be inserted in the fixing hole and also a fixable displacement body at the upper limit of the belt eye for limiting the width of the guide slit.

A disadvantage of this solution has proven to be that the screw head of the fixing screw is only supported on the guide element with an overlap which must be considered extremely small due to the cylindrical collar of the adapter which is located inside the fixing hole. Because of this very slight overlap, the risk that the fixing screw could pop out of the fixing hole of the guide elements is present in the presence of greater loads, as occur, for example, during a crash.

In order to counteract this unsatisfactory state of affairs, the solution is known of enlarging the overlap by means of correspondingly-sized washers or of using fixing screws with special dimensions, in particular screws with large heads. However, this leads to increased expenditure as regards costs and material. This is the point at which the invention described in the following text comes into play.

Starting from the state of the art according to DE 202 05 570 U1, it is the task of the invention to create an improved device of the generic kind which effectively prevents the fixing screw head from popping out of the fixing hole, while maintaining fixing of an adapter, which in itself is known, to the guide element with simple and low-cost means.

According to the invention the task is fulfilled in conjunction with the characteristics described in the introductory section to Claim 1, in that the fixing hole of the guide element is on the one hand formed by a boring whose cross section is selected so as to be slightly greater than the external diameter of the screw shaft in order to achieve greatest possible overlap of the available free bearing surface of the guide element with the head of the fixing screw, and on the other hand a number of grooves are assigned to the boring, distributed over its circumference, into which for their part fixing arms of the adapter pointing in the axial direction of the boring extend when the adapter is mounted.

Within this arrangement is it particularly advantageous if the grooves are distributed evenly over the circumference of the boring, so that they effect centering of the fixing screw.

As a further development of the invention. it is provided that the fixing arms are formed so as to be elastic within certain limits. It is also proposed that the fixing arms exhibit on their free end respectively a hook-like structure pointing radially outwards engaging behind the walls of the guide element when mounted. It is useful if the fixing arms or their hook-like structure are supplied with a guide chamfer.

In an advantageous manner, in other words without the use of additional components such as washers and without the need to manufacture a special type of screw, the redirecting device proposed here allows a greatest-possible overlap of the available free bearing surface of the guide element by the screw head of the fixing screw to be achieved, taking the state of the art into consideration, and therefore effectively prevents the screw head from popping out of the fixing hole. Finally it is also advantageous to provide exact fixing of the adapter onto the guide element, in other words also to ensure security against free and unwanted turning in relation to the guide element, without basically reducing the aforementioned overlap of the guide element by the screw head.

A further embodiment of the redirecting device formed according to the invention provides that the fixing arms

when in mounted condition form a circle with a slightly smaller internal diameter than the internal diameter of the boring. The advantage of this design consists in the fact that the reduction of the cross-section of the fixing arms ensures that the fixing screw lies against the fixing arms without causing any noise.

Finally, it is possible to form the redirecting device so that the fixing arms of the adapter are positioned in such a way relative to the displacement body that when the adapter is mounted, a basically constant slit width of the guide slits results. This measure ensures that the adapter cannot turn freely in relation to the guide element following mounting, and that therefore a constant, preferably parallel geometry remains in the redirecting device for belt guidance.

The invention will be described in the following text by means of an embodiment shown in schematic form in the drawings. The drawings are as follows:

- Fig. 1 an exploded representation of the redirecting device according to the invention,
- Fig. 2 an assembled redirecting device in a perspective view,
- Fig. 3 a birds eye view of the redirecting device according to Fig. 2,

Fig. 4 a section I-I according to Fig. 3, and

Fig. 5 a View A according to Fig. 1.

According to Fig. 1 to Fig. 5 the redirecting device for a safety belt not shown in more detail first consists of a guide element 2 provided with a guide slit 1 for the said safety belt, which is fixed to a bearing component of the vehicle body not shown in more detail here, for example a vehicle pillar, by means of a fixing screw 3 led through a fixing hole in the form of a boring 4 in guide element 2. For its part, guide slit 1 exhibits a rounded running surface 5 for the safety belt, in order to ensure unhindered guidance of the same.

Guide element 2 is as shown preferably manufactured in one piece of a piece of sheet steel as a complete metal component by means of cold forming or is formed as a steel plate moulded round with plastic.

Between guide element 2 and the bearing component, an adapter 6 which is already known and is preferably manufactured of plastic by the injection moulding process, is positioned along with a displacement body, which also exhibits an opening 8 which is penetrated by fixing screw 3. Guide element 2 and adapter 6 are therefore arranged coaxially to one another, whereby displacement body 7, as it known, serves to limit the slit width of guide slit 1.

In order to fulfil the set task in a satisfactory manner, taking the fixing of adapter 6 onto guide element 2 into consideration, namely to effectively prevent the screw head 9 of fixing screw 3 from popping out of the fixing hole or the boring 4 of guide element 2 by simple and cost-effective means, according to the invention the cross-section of boring 4 is selected so as to be slightly bigger than the external diameter of screw shaft 10. This achieves a greatest-possible overlap of the available free bearing surface 11 of guide element 2 by screw head 9.

This may at first not be so notable in itself, but in combination with the arrangement of a number, namely of two or more, grooves 12 preferably distributed evenly over the circumference of boring 4 of guide element 2, into which for their part when the redirecting device is mounted, fixing arms 13 of adapter 6 extend which point in axial direction of boring 4 (Fig. 4), a considerable improvement as against the current state of the art is achieved in relation to disturbance-free function of the redirecting device also in case of a crash, as is required by the task set, along with fixing of the adapter 6 on guide element 2.

In the current invention, three grooves 12 are provided, between which areas of the free bearing surface 11 are created or maintained for the screw head 9 (Fig. 4).

As already described in the introductory section of the description, according to the state of the art (DE 202 05 570 U1) these areas are for most part replaced by a cylindrical collar fixed to Adapter 6, which for its part decreases the overlap of the available free bearing surface 11 of guide element 2 by screw head 9 in a disadvantageous manner.

In the version explained here, it has proven advantageous to form fixing arms 13 of adapter 6 to be elastic within limits, in order to make it easier to introduce them into grooves 12 during assembly and in addition also to achieve a certain force fit.

It can also be advantageous, as particularly shown in Fig. 1 and Fig. 3, to provide fixing arms 13 with a hook-shaped structure 14 at their free ends facing radially outwards, which engage behind the walls of guide element 2 when mounted and therefore provide additional interference or form fit.

In the same way it has proven advantageous to provide a guide chamfer 15 on fixing arms 13 or on their hook-shaped structure 14, which also means that mounting of adapter 6 on guide element 2 is easier.

Reference Nos.

- | | |
|----|-----------------------|
| 1 | guide slit |
| 2 | guide element |
| 3 | fixing screw |
| 4 | boring |
| 5 | running surface |
| 6 | adapter |
| 7 | displacement body |
| 8 | opening |
| 9 | screw head |
| 10 | screw shaft |
| 11 | bearing surface |
| 12 | grooves |
| 13 | fixing arms |
| 14 | hook-shaped structure |
| 15 | guide chamfers |

Patent claims

1. Redirecting device for a safety belt on motor vehicles, consisting of a guide element (2) provided with a guide slit (1) for the safety belt, which is fixed to a component of the vehicle body by means of a fixing screw (3), and an adapter (6) with a displacement body (7) for limiting the slit width of the guide slit (1), whereby the adapter (6) also exhibits an opening penetrated by the fixing screw (3) and is fixed inside the fixing hole of guide element (2) characterised in that

the fixing hole of the guide element (2) is on the one hand formed by a boring (4), whose cross-section is selected to as to be slightly bigger than the external diameter of the screw shaft (10) in order to achieve the greatest-possible overlap of the available free bearing surface (11) of guide element (2) by screw head (9) of fixing screw (3), and that on the other hand a number of grooves (12) are allocated to boring (4) distributed over the circumference of same, into which for their part fixing arms (13) of adapter (6) pointing in axial direction of boring (4) extend when adapter (6) is mounted.

2. Redirecting device according to Claim 1, characterised in that fixing arms (13) are formed as to be elastic within certain limits.

3. Redirecting device according to either Claim 1 or Claim 2, characterised in that the fixing arms (13) exhibit a hook-shaped structure (14) at their free ends respectively, said structure pointing outwards in a radial direction and engaging behind the walls of guide element (2) when mounted.

4. Redirecting device according to any of Claims 1 to 3, characterised in that fixing arms (13) and/or their hook-shaped structure (14) are provided with a guide chamfer (15).

5. Redirecting device according to any of Claims 1 to 4, characterised in that grooves (12) are evenly distributed over the circumference of the boring (4).

6. Redirecting device according to at least one of the preceding claims, characterised in that the fixing arms (13) form a circle with a slightly smaller internal diameter than the internal diameter of the boring when the adapter (6) is mounted.

7. Redirecting device according to at least one of the preceding claims, characterised in that the fixing arms (13) are positioned relative to the displacement body (7) in such a way that a basically constant slit width of the guide slit results when adapter (6) is mounted.